Yarmouk University

Faculty of Economics and Administrative Sciences

Department of Banking and Finance



"The Impact of Corporate Governance on Cash Flows Sensitivity to Cash in Amman Stock Exchange"

"أثر حاكمية الشركات على حساسية التدفقات النقدية للنقد في بورصة عمان"

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By

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B.Sc. Economic, Yarmouk University 2010

This thesis is submitted as partial fulfillment of the requirements for the degree of Master in Banking and Finance Sciences in the Department of Banking and Finance, Yarmouk University, Irbid, Jordan.

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Dedication

I dedicate this thesis to my father……

Acknowledgment

I would never have been able to finish my dissertation without the guidance of my supervisors, help from friends, and support from my family. Therefore, my gratitude and appreciation goes to all those who gave me the possibility to complete this research. A special thanks to my father and mother for their countless times. My deepest gratitude goes to my big family; sisters and brothers for supporting and encouraging me. Many thanks go to my advisors Dr. Ziad Zurigat and Dr. Mohammad Gharaibeh for their guidance, caring, patience, and providing me with an excellent atmosphere for doing research. I offer my sincere appreciation for the learning opportunities provided by the committee; Dr. Mohamad Ajlouni and Prof. Mahmoud Qaqish.

Last but not least, my completion of this study could not have been accomplished without the support of my friends who directly and indirectly helped me to complete this research: Khalid Harahsih, Nada Ibrahim, Tareq Zoubi, Suzan Hani and others.

Amal Mohammad Alzenati

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Abstract

This study investigates the impact of corporate governance, financial constraints and investment opportunities on cash flow sensitivity of cash, using panel data for 48 industrial firms listed in Amman Stock Exchange (ASE) over the period (2003 – 2011). Two indexes have been constructed to accomplish the study objectives. The first is the corporate governance index which measures the balance of power between shareholders and insiders of the firm. The index is calculated through depending on the financial and annual reports of the study sample. The second is the financial constraints index which consist of two dummy variables; the size of the firm and the dividend. It reflects the level of constraints that face the firms. The study used market to book ratio to reflect the investment opportunities that face the Jordanian industrial firms. Using panel data analysis, the study finds that good corporate governance mitigates the sensitivity of cash, where statistically significant is found

between corporate governance and cash flow sensitivity of cash. Moreover, the study reports evidence suggesting that firms facing financial constraints have higher cash flow sensitivity of cash than those unconstrained firms. The result also shows no significant relationship between investment opportunities and cash flow sensitivity of cash. Based on its findings, the study recommends that Jordanian industrial firms should focus on improving the quality of corporate governance, and take necessary procedures and steps to mitigate the financial constraints that face those firms.

Key words: Cash Flow Sensitivity of Cash, Corporate Governance, Financial Constraints, Imperfect Market, Amman Stock Exchange.

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بإشراف

الدكتور : زياد زريقات

مشرف مشارك

الدكتور : محمد غرايبة

تهدف هذه الدراسة إلى بيان العلاقة بين القيود المالية وحاكمية الشركات والفرص الإستثمارية ، وتأثير كل منها على حساسية التدفقات النقدية للنقد، وباستخدام بيانات السلاسل الزمنية المقطعية (Panel Data) لثمان وأربعين شركة صناعية مدرجة في بورصة عمان خلال الفترة (2003 -2011) . تم احتساب مؤشرين لتحقيق اهداف الدراسة. المؤشر الأول وهو مؤشر حاكمية الشركات حيث يعكس نفوذ ومقدرة اصحاب الأسهم والعاملين الداخليين في الشركة، وقد تم الحصول على البيانات المطلوبة لإحتسابه من خلال التقارير المالية والسنوية لعينة الدراسة. أما المؤشر الثاني وهو مؤشر القيود المالية الذي يتكون من متغيرين وهميين وهما حجم الشركة وتوزيع الأرباح. وتم استخدام نسبة القيمة السوقية إلى القيمة الدفترية لإستقصاء آثر الفرص الإستثمارية. دلت النتائج بأن حاكمية الشركات تحد من حساسية التدفقات النقدية للنقد، حيث أوجدت النتائج وجود علاقة سلبية ذات دلالة احصائية بين حساسية التدفقات النقدية للنقد والحاكمية المؤسسية. كما توصلت الدراسة إلى أن حساسية النقد للتدفقات النقدية تكون عالية في الشركات المقيدة مالياً مقارنة بالشركات غير المقيدة. كما اظهرت النتائج بعدم وجود علاقة ذات دلالة احصائية بين الفرص الإستثمارية وحساسية التدفقات النقدية للنقد. وإستنادا إلى النتائج

المتوصل إليها ، توصي الدراسة الشركات الصناعية الأردنية بتحسين الحاكمية لديها، واتخاذ الإجراءات والخطوات اللازمة للتخفيف من القيود المالية التي تواجه تلك الشركات.

الكلمات المفتاحية : حساسية التدفقات النقدية للنقد ، حاكمية الشركات ، القيود المالية ،السوق غير الكاملة، بورصة عمان.

Chapter One

Framework of the Study

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Chapter One

Framework of the Study

1.1 Introduction

The irrelevancy theory of Modigliani and Miller (1958) suggested that investment and financial decisions are independent, implying that investment decisions are not sensitive to the availability of cash. They built their argument on the perfection assumption of capital market in which there are no markets frictions such as asymmetric information (Myers & Majluf, 1984), and agency cost (Jensen & Meckling, 1976). The absence of these frictions makes the capital market perfect; hence, firms should show no preferences of internal financing over external financing, making cash holdingss insensitive to the cash flow.

In reality, capital market is not perfect which denotes that market frictions are relevant. The presence of market frictions restricts the firm's ability to generate external funds and consequently increasing their reliance on internally generating funds. These actions make cash holdings sensitive to the cash as presented by Almeida *et al*. (2004). This makes determining the level

of cash as one of the most important financial decisions, especially, in financially constrained firms, such as small firms and those with lower bond rating. Because financially constrained firms have limited access to capital market, they tend to hold more cash than financially unconstrained firms (Opler *et al*., 1999). Therefore, cash holdings for financially constrained firms are highly sensitive to cash in comparison with financially unconstrained firms (lin, 2007).

Moreover, the amount and value of cash held by firms may differ from one firm to another. The reason for these differences may be attributed to the level of corporate governance and financial constraints. It may also be attributed to the level of contrasts faced by each firm. Provided that, corporate governance is the formal mechanisms of directing, supervision, and control, all of which monitor the decisions and actions of managers to ensure that manager's decisions and actions are consistent with the specific interest of shareholders (Lee, 2006).

According to Dittmar and Smith (2007), the value of cash in good governance firms approximately doubles the value of cash in poor governance firms. This is because of an inefficient way of using cash in poor governance firms as managers waste the corporate resources. Hence, good corporate

governance defends the firms from the inefficient use of cash. In other words, the quality of corporate governance has a positive significant impact on cash holdings (Ginglinger & Saddour, 2007).

Therefore, this study examines the impact of corporate governance and financial constraints on cash flow sensitivity of cash in Jordanian industrial firms during the period (2003-2011).

1.2 Problem of the Study

Fazzari *et al*. (1988) provide evidence suggesting that investment decisions in developed countries is highly sensitive to the cash flows implying that market frictions are a common problem for both developed and developing capital markets. Thus, the presence of financial frictions makes cash holdings sensitive to cash flows as presented by Diaz & Ramirez, (2011).

However, the severities of these frictions differ from one market to another, depending on the level of competition, development, transparency and liquidity. Hence, it's expected that this problem will be more severe in less developed markets, where markets are thin and small with a low level of transparency, competition and development.

Jordan as a developing country, the market is characteristic with lower liquidity, lower competition and limited financing sources, in addition to the presence of asymmetric information and agency problem. All these considerations are relevant in Jordan capital market and affect a firm's investment and financial decisions (Zurigat & Gharibeh, 2011). The presence of these frictions makes some firms financially constrained while the others not and consequently increasing their cash flows sensitivity of cash.

The findings of empirical studies that have been conducted in both developed and developing countries suggest that corporate governance will be valuable for financial constrained firms, since corporate governance tend to reduce the severity of market frictions and cash flow sensitivity of cash. Therefore, the current study is carried out to investigate the impact of the degree of financial constraints and corporate governance on cash flow sensitivity of cash, in industrial firms in Amman stock exchange during the period (2003-2011).

1.3 Objectives of the Study

The current study aims to investigating the impact of corporate governance on the cash flow sensitivity of cash in Jordanian industrial firms listed in ASE over the period (2003-2011). More precisely, it aims to investigating whether cash flows of Jordanian industrial firms are sensitive to cash, and to what extent corporate governance, financial constraints and growth opportunities

influence the degree of cash flow sensitivity of cash in Jordanian industrial firms.

1.4 Importance of the Study

The importance of this study can be outlined by the following points:

- The study results will be important for firm's management to improve governance system.
- Still there are few studies addressing the impact of corporate governance on cash flow sensitivity of cash, especially in the imperfect markets.
- The study will be important for stakeholders who can know their right and responsibilities and their impact on management decisions.
- The study provides the construct of governance index (G-index) as measurement of the power of shareholders.

1.5 Hypotheses of the Study

The main hypotheses of this study are:

H1: There is a statistically significant relationship between cash flows sensitivity and in Jordanian industrial firms.

H2: There is a statistically significant relationship between cash flow sensitivity and financial constraints in Jordanian industrial firms.

H3: There is a statistically significant relationship between cash flow sensitivity and corporate governance in Jordanian industrial firms.

H4: There is a statistically significant relationship between growth opportunities and cash flow sensitivity of cash in Jordanian industrial firms.

1.6 Organization of the Study

The remaining of this study is organized as follows. Chapter two covers the theoretical background. Chapter three reviews the major empirical studies. Chapter four presents the data and the research methodology. Chapter five presents the empirical results and chapter six summarizes the conclusions and recommendations.

1.7 Limitation of the Study

Some shortage of available database for the Amman Stock Exchange in order to collect the data that results in minimizing the size of the sample.

Chapter Two

Theoretical Framework

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Chapter Two

Theoretical Background

2.1 Introduction

In the real world, the capital market is not perfect. This implies that financial frictions such as asymmetric information, agency cost and bankruptcy cost are relevant which reduce a firm's ability to generate external funds. Accordingly, increasing reliance on internal generated funds makes cash flow highly sensitive to cash. Hence, the current study comes to examine the cash flow sensitivity of cash in Jordanian industrial firms during the period (2003-2011). This chapter reviews the theoretical background on the financial constraints, corporate governance, free cash flow hypothesis, agency problem, cash holdings, and asymmetric information.

2.2 Financial Constraints

According to Fazzari *et al*. (1988), the concept of financial constraints is due to the ability of firms to obtain their funds and pay dividends. Since they view firms as financially constrained when external financing is too expensive, In this case, firms use internal funds to finance their investments

rather than to pay out dividends. Consequently, they considered firms with low dividends as most constrained than firms with high dividends.

On the other hand, Kaplan and Zingales (1997) identify firms as constrained firms when they can't access more funds than needed to finance their new investment opportunities, while those firms with easy access funds more than needed to finance their new investment opportunities are unconstrained firms.

Based on these definitions, the financial constraints are the frictions that prevent firms from obtaining their financing requirements at a more attractive rate. The presence of asymmetric information and agency cost makes internally generated funds less expensive than externally generated funds, increasing the reliance on internally generated funds for financing and consequently making cash as highly sensitive to cash (Fazzari *et al*., 1988) and (Hennessy & Whited, 2007).

2.3 Cash Holdings

Cash holdings are considered as a major item in asset structure of firm which assists firm to operate activities and other purposes. Gill and Shah (2012, P.1) define cash holdings as cash available at hand or readily for investment in assets and to payout to investors. Myers and Majluf (1984)

consider cash holdings as financial slack that can be used to beat the problem of financial constraints. Therefore, cash holdings are viewed as cash or cash equivalent which can be easily converted into cash.

Many researchers examine the motives of holdings cash. Opler *et al*. (1999), add a transaction motive that tend a firm to hold cash for day to day operations. Keynes (1936), considered a precautionary motive to face the random unforeseen fluctuations in cash flow which makes external financing too expensive and consequently, increasing the chance of forgoing positive net present value project (Han & Qiu, 2007).

Three theories take cash holdings into consideration: the trade-off theory, pecking order theory and free cash flow theory. According to trade-off theory, optimal cash holdings are determined by balancing the marginal costs and the marginal benefits of holdings cash (Ferreira & Vilela, 2004). They are associated with the benefits of holdings cash with the reduction in the likelihood of financial distress, the continuance of investment policy when financial constraints are met, and minimizing the costs of raising external funds or liquidating existing assets. The marginal cost of holdings cash is associated with the opportunity cost of the capital employed due to the low return on liquid assets.

The pecking order theory of Myers and Majluf (1984) concludes that the level of cash holdings results from financing and investment decisions. In the

context of pecking order theory, firms depend on internally generated funds to financing operations, then with debt and finally with equities, because issuing new equities is very costly for firms and the adverse selection of asymmetric information that potential investors price new issuance of equity at a discount (Myers & Majluf, 1984). Thus, when operational cash flows are high, firms use this cash to repay debts, to finance new profitable projects, to pay dividends and finally to accumulate cash. But, when this cash is insufficient to finance new investments, firms use their cash holdings and, then issue new debt.

The last theory explained by Jensen and Meckling (1976) is the agency theory which states that a manager has an incentive to holding cash to increase the amount of assets under their control and to gain discretionary power over the firm investment decision. With cash holdings, they do not need to increase external financing and may undertake investments that have a negative impact on shareholders' wealth.

2.4 Financial Constraints and Cash Holdings

In perfect capital market, cash holdings are irrelevant. In other words, firms do not suffer from reaching financial resources (Ginglinger & Saddour, 2007).

In perfect capital markets, no financial constraints are faced by firms. They can generate external funds at any time they need without any restrictions. Perfect capital market is absent in financial constraints that face the firms; there are no transaction cost, agency cost, and asymmetric information cost. Hence, external and internal financing are perfectly substitute for each other (Modigliani & Miller, 1958).

However, an imperfect capital market, financial constraints exist. So, firms reserve cash because of existing market frictions that make the cost of external financing exceed internal financing. On the other hand, the presence of financial constraints makes firms not be able to obtain external financing at attractive rates which tend to increase the impetus of firms to hold cash to avoid the high cost of externally generating financing (Khurana *et al*., 2006).

2.5 Corporate Governance

Corporate governance has been an interesting issue for academic and business levels. This attention stems from the need of corporations for a system that has the power to monitor its operation of a corporation and to minimize its shock (Ramly, 2012). Thus, corporate governance has been one of the most essential factors behind the success of companies. The Organization for Economic Co-operation and Development (OECD) suggest that corporate governance is one key element in improving economic

efficiency and growth as well as enhancing investor confidence (Shanikat & Abbadi, 2011).

Various studies have tested the impact of corporate governance on different indicators of performance. These studies reveal a positive correlation between corporate governance and firm size (Lang & Weir, 1999), profitability and efficiency (Varis *et al*., 2001), the value of the organization (Aggarwal & Samwick, 2003), financial performance of the organization (Gompers *et al*., 2003), dividend policy (Daradkah & Ajlouni, 2013), and corporate growth (Klapper & Love, 2004). These findings reflect to what extent corporate governance is important for value maximizing. This suggests that corporate governance is needed for firms largely in less developed countries where capital markets are not developed well.

Huyghebaert and Wang (2012) defined the corporate governance as the set of processes and structures focused on the assurance of the sustainability of firms' performance, because the interests of investors and managers might conflict and thereby harm the firm value.

The World Bank defines corporate governance as the exercise of political authority and the use of institutional resources to manage society's problems and affairs. It specifies the distribution of rights and responsibility among different participants in the corporations, as the board of directors, managers,

shareholders, investors, employees, customers, suppliers, and spells out the rules and procedures for making decisions on corporate affairs (OECD, 2004).

Hence, we can say that corporate governance is the set of processes, policies, laws, and rules which can organize the relationship between shareholders, managers, and stakeholders of the corporation and monitor corporate resources, operations, activities and decisions in a manner that maximizes value for all stakeholders.

Principles of Corporate Governance

The principles of corporate governance that have been set by OCED (2004) have become an international benchmark for policy decisions and makers, investors, corporations and other stakeholders worldwide. It is used as a useful tool to improve corporate governance, and consequently firms' performance and value. These are:

1. Shareholders Right:

Shareholders are considering a beneficial part in a corporation so they have rights to protect them against other parties (Caton & Goh, 2008). These rights depend on the structure of corporate governance in a corporation; it gives them the opportunity to participate effectively and vote in general shareholder meetings and to ask the board questions related to place items on the agenda

of general meetings and the annual external audit, and to propose resolutions. In addition, they participate in a key corporate governance decisions, such as the election of board members (OECD, 2004).

Many studies find that shareholders rights have a significant impact on many indicators in a firm. Core *et al*. (2006) find that stronger shareholder rights are associated with higher earnings, Garmaise and Liu (2005) conclude that strong shareholder rights can mitigate overinvestment problems, reducing the cost of capital, and consequently increasing or enhancing the firm value.

2. Stakeholders Right:

Stakeholders are any group or individual who can affect or be affected by the achievements of the organization' objectives (Freeman, 1984). Stakeholders are classified into internal and external; internal stakeholders are those included within the organization such as employees or managers, whereas external stakeholders are such group as suppliers or customers who are not generally considered to be a part of the organization (Schneper & Guillen, 2004).

The corporate governance framework should admit the rights of stakeholders established by law or through mutual agreements and encourage

active co-operation between corporations and stakeholders in creating jobs, wealth, and the sustainability of financially sound enterprises (OECD, 2004).

The right of stakeholders should be respected and protected by law; stakeholders should have the opportunity to obtain effective redress for violation of their rights; they should have access to sufficient, relevant, and reliable information on a timely and regular basis to participate in the corporate governance process, and should be able to freely communicate their concerns about illegal or unethical practices to the board (OECD, 2004).

3. The Responsibilities of the Board:

The corporate governance framework should ensure the strategic guidance of the company and the active monitoring of management by the board of directors. The board of directors is considered the top executive unit of a company and is charged with the responsibility of supervising and monitoring operations of the company's management (OECD, 2004).

The board should apply high ethical standards. They should take into account the interests of stakeholders and treat all shareholders fairly when taking a decision that may affect different shareholder groups differently. They should work on a completely informed basis, in good faith, with due

assiduity and care, and in the best interest of the company and the shareholders (OECD, 2004).

Tuggle *et al*. (2010) show that the presence of an environmental committee in the board mitigates the conflict of interests between the stakeholders and the company's management regarding the disclosure of environmental information.

4. Disclosure and Transparency:

The corporate governance framework should secure that timely and accurate disclosure is made on all material matters regarding the corporation, including performance, financial situation, governance of the company, and ownership (OECD, 2004).

Disclosure helps interested parties to understand the structure and activities of corporation, corporate policies and performance with respect to environmental and ethical standards, and corporations' relationships with the communities in which they operate. It can also be a powerful tool for influencing the behavior of companies and for protecting investors (Levitt, 1998). Disclosure policy is considered as a direct tool to investor protection.

Past studies find that a disclosure associated with many financial objects. Botosan and Plumlee (2002) find that more detailed disclosure for annual

report leads to a decrease in the expected cost of equity capital, because improved disclosure mitigates the asymmetric information problem that is considered as a main factor to increase the cost of equity capital (Bushee & Leuz, 2005).

2.6 Corporate Governance in Jordan

The good corporate governance is a way to successful firms, it refers to the mechanisms that organize and control a firm to achieve its goals, and to maximize its resources and actions (Abu-Tapanjeh, 2006). Based on this view, many studies reveal a positive significant impact on different financial indicators. Consequently, many developed and developing countries strive to improve corporate governance in their firms. Precisely, after the financial crises, since these crises reveal the importance of improving the code of governance for each country (Mangena & Chamisa, 2008).

Therefore, in 2005 Amman Stock Exchange published the first edition of the Jordanian Code of Corporate Governance. This code is designed to create an improved business and investment environment and enable more sustainable growth by increasing accountability, fairness, transparency, and corporate responsibility. The Code is based on the Organization for Economic Co-operation and Development (OECD) principles of corporate governance namely; commitment to corporate governance, protection of shareholders,

equitable treatment of shareholders, disclosure and transparency, role of stakeholders, and roles and responsibilities of the board of directors (Shanikat & Abbadi, 2011).

Accordingly, the main objective of this Code, as stated by Companies Control Department, is to provide guidelines to all kinds of organizations with the main purpose of increasing the value of organizations, improving sustainability, and performance of organizations and facilitating increased access to finance at lower costs.

The Code is based upon the "Comply-or-Explain" principle. This principle is built around the notion that all organizations for which this Code applies must comply with the provisions of this Code; however, if they do not comply or are unable to for any reason, they must explain why. This model has proved to be very successful in implementation as it enables smooth and gradual implementation of the Code, creating a culture and awareness of the added value it brings to the business without the associated heavy costs with immediate and fast implementation.

The Code of Conduct establishes the social and environmental duties of the organization and may cover some of the following subjects: compliance, corruption, conflicts of interest, privileged information, gift receiving,

discrimination at the workplace, the environment, community relations, company share-trading policies and fraud prevention.

2.7 Agency Problem

The theoretical background of agency problem is referred to Berle and Means (1932) who argue that the conflicts of interests between management and shareholders are due to ownership structure which separation of ownership and control (Mizruchi, 2004).

Jensen and meckling (1976, P. 308) define agency relationship "as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent."

However, the separation of control and ownership leads to a divergence of interests between managers and shareholders which lead to the agency problem. That is, managers engage in activities for their own benefits rather than the benefits of the firm's shareholders.

The agency theory is based on three assumptions as follows: first, the goal of management is to maximize personal wealth instead of a stockholder's wealth. Second, agency costs are incurred to the burden of stockholders because of weak corporate governance. Third, a management's self-interest

motivates waste and inefficiency in the presence of free cash flows (Brush *et al*., 2000).

The agency theory views the company as a set of agreements between different parties. Shareholders, that are principals, hire managers and assign them the task of managing the daily operations of the company. Managers, paid by salary, represent the interests of the principal in order to maximize the value of the company. On the other hand, the board elected by the owners regularly meets with managers to oversee their activities and try to ensure that they truly act in the best interest of the principal (Popovi *et al*., 2005).

However, there is a cost to mitigate this problem which is called the agency costs; this cost is derived because principal and agents' utility function aren't equal. Jensen and Meckling (1976) defined this cost as the inevitable loss of firm value that arises with the agency problems along with the costs of contractual monitoring and bonding.

The monitoring cost is related to expenditures by the principal in monitoring the agent to ensure that the agent works in the principal's best interest. The monitoring cost implies observing the behavior of the agent, in addition to controling the behavior of the agent through compensation policies, budget restrictions, and operating rules (Al Mamun *et al*., 2012).

Jensen and Mackling (1976) argue that agents to assure the principal do not take actions which have negative impact on principal; principal may take action by spending resources to agents to prevent them from take these actions, which is called bonding costs and it is considered as a premium to agent.

Therefore, the agency problem arises from three factors under imperfect market as follow (Barnea *et al*., 1981):

1. The agent may have an inability to disclose the exact nature of the firm to debt and equity financiers (the principals).
2. Under limited liability and the existence of debt financing, shareholders tend to invest in high risk projects which transfer wealth from debt holders to shareholders.
3. Partial ownership: if the manager is partially owner, they incentive to consume non-pecuniary benefits or perquisites more than when is a sole ownership.

These divergences can be minimized by motivating the managers to use rewards, prohibitions and penalties and through monitoring the managers' activities by electing other independent parties (board of directors), in addition to governance system. In agency theory, the main role of the board is to monitor managers to ensure that their interests do not diverge substantially

from those of the principals, and that they take actions maximizing principals' returns (Lan & Heracleous, 2010).

2.7.1 Conflict between Shareholders and Debtholders

Generally speaking, agency conflict between debtholders and shareholders assumes that the large level of debt may create asset substitution problem or risk shifting. For asset substitution, shareholders have incentives to take benefits for themselves, because of the expense of debt-holders. On the other hand, if shareholders tend to invest in risky projects than those preferred by debt-holders, the returns from the investment are for shareholders even if it's higher than the debt value. But, if the investment fails, the losses are shared between debt holders and shareholders (Jensen & Meckling, 1976).

The cost that stems from such a conflict is called agency cost of debt. It is the difference between the total value of the all-equity and levered firms (Manso, 2008).

Moreover, Smith and Warner (1979) identify four major sources of conflict between bondholders and stockholders. First, dividend payout, assuming that when a firm keeps its dividend policy and bonds are priced, their value is reduced by unpredicted dividend increases financed either by reductions in

investments or by the sale of debt. Second, claim dilution, assuming that additional debt of the same or higher priority will not be issued and bonds are priced, issuing such additional debt reduces the value of the bondholders' claims. Third, asset substitution; the value of the stockholders' equity increase and the value of the bondholders' claim decrease when the firm substitutes high-risk for low-risk projects. Fourth, underinvestment; when a substantial portion of the value of the firm is composed of future investment, a firm has incentives to reject positive net present projects, because the benefit from accepting these projects accrues to the bondholders (Smith & Jensen, 1985).

Khan *et al*. (2012) show that liquidity as an indicator of agency cost of debt; they argue that the higher the liquidity of firm, the higher the opportunity for managers to engage in activities that harm debt holders, because managers can expropriate wealth from debt holders for the stockholders, precisely when assets are more liquid. So, the higher the liquidity of firm, the higher the probability of agency cost of debt.

Fatmasari (2011) state that the conflict between shareholders and bondholders occurs because of the revenue structure and levels of risk. The revenue of bondholders earns a fixed income from interest and repayment of the loan principal, while the shareholders get any excess revenue after the liability that needs to be paid to bondholders. According to the level of risk,

when the management works as agent for shareholders and they exercise a high-risk activity, the level of risk faced by bondholders is much higher than the shareholders. In addition, they offered three mechanisms to prevent this conflict, the reduction of total debt, short-maturity and covenant.

27.2 Conflict between Shareholders and Managers

Berle and Means (1932) addressed the conflict between shareholders and managers due to the potential lack of alignment of goals, preferences, and actions between shareholders and managers. Consequently, the conflicts of interest between them is due to the moral hazard behavior of managers that can waste firm resources on unnecessary expenditures or minimize their effort to achieve shareholders' goal (value maximization), or mangers may act to achieve their own goals instead of those of the shareholders (Mizruchi, 2004).

Kapoor (2009) defines shareholders value is the sum of all strategic decisions that affect the firm's ability to efficiently increase the amount of free cash flow over time. This value refers to the management's ability to grow share price, dividends and earnings.

As mentioned before, shareholders can compensate the managers to achieve their goals and control agency cost through compensation mechanisms such as bonus. Myers and Smith (1981) offers provisions of compensation plans to

control costs arising from conflicts of interest; these provisions categories show that the compensation does not depend on firm performance, but depends on market measures of firm performance and accounting measures of performance.

2.7.3 The Role of Corporate Governance in Reducing the Agency Problem

Daily *et al*. (2003, P. 371) define corporate governance as "the determination of the broad uses to which organizational resources will be deployed and the resolution of conflicts among the myriad participants in organizations". They proposed this definition in contrast to the dominant agency problem and inspired a definition of governance to focus on controlling managerial self-interest and protecting shareholders (Lan & Heracleous, 2010).

Hence, Shleifer and Vishny (1997) show that strong corporate governance can mitigate the agency problem and restrain managers' incentives to further their own interests at the expense of the shareholder.

In addition, Garmaise and Liu (2005) support the hypothesis that strong shareholder rights, which mean strong corporate governance, reduce the cost of equity by mitigating agency problems from free cash flow.

Richardson (2006) finds that the presence of activist shareholders mitigates overinvestment of FCF, since good corporate governance restricts the inefficient use of corporate cash by managers. Brush *et al*. (2000) asserted that weak corporate governance caused the inefficiency allocation of free cash flows while the board of directors was directed at the policies in favor of management's interest at the expense of stockholder's wealth.

2.8 Free Cash Flow Hypothesis

Free cash flow (FCF) is considered a cash flow in excess of that required funding all projects that have positive net present values (NPVs) when discounted at the relevant cost of equity. The original definition of FCF is net cash flows of operating cash flows less inventory cost, capital expenditure and dividend payment which is the cash available in the management's hands (Jensen, 1986).

Jensen (1986) argues that the conflicts of interest between managers and shareholders are arduous when the cash is more than profitable investment opportunities. The FCF hypothesis states that when a company has generated an excessive surplus of FCF and there are no profitable investment opportunities available, hence the management tends to abuse the FCF in

hands that resulting in an increase in agency costs, wrongful investment, and inefficient resource allocation (Wang, 2010).

Berkovitch and Kim (1990) suggest that firms with high FCF are more incentives to engage in excessive investment, which may accept negative net present value (NPV) projects that have lower cost of capital. In other words, there is an agency cost that results from using managers' excess cash flow to overinvest in the firm, so that shareholder wealth is not maximized.

The amount of the free cash flow available to management is an important consideration in the agency cost explanation. Consequently, if the corporation has substantial excess funds, managers will often invest these funds in negative-NPV projects. This overinvestment problem can be mitigated by reducing excess funds (Garmaise and Liu, 2005).

This conflict is not likely to be resolved by contracts based on cash flow and investment expenditure. The use of debt can decrease the free cash flow available to managers through repayment to debt holders (Jensen & Meckling, 1976); Jensen (1986).

2.9 Asymmetric Information

Information is important for financial markets operations, managerial decisions and auditing systems. Therefore, managers, accountants and investors want to reach reliable and accurate information for making their decisions. When insider and outsider participants have a lack of essential environmental information which means one part has superior information than other parts, and when a manager hides the real information about projects that may have negative information this is called asymmetric information (Bisin & Gottardi, 1999).

In the presence of asymmetric information a manager might rejecting positive NPV project or accepting negative NPV which tend to prevent achieving shareholders' goal. In addition, the accurate information assist participants of financial market to prevent potential financial risks associated with the bad environmental performance of firms (Schaller, 1993).

Moreover, the presence of asymmetric information creates a gap between cost of external and internal financing .Since, firms that have a high level of asymmetric information suffer from a highly external financing in comparison with firms that have low asymmetric information (Fazzari *et al*., 1988).

"The Market for Lemons" which is written by George Akerlof who got the Nobel Prize in 2001 for his study that include asymmetric information topic, gives an example for cars to clarify the asymmetric information problem.

However, the seller has the incentive to overestimate the quality of the car and disclose only good information in order to gain more from selling. In the same time the buyer relies on seller even if the seller discloses the full information. The buyer can't discriminate between a good used car and a 'lemon' and offer the same price for both. So, he concludes that bad cars drive good cars out of the market thus reducing the quality of used cars sold in the market. In addition, he shows that there is no problem of information asymmetry when the seller of a used car discloses the full information about the car (Akerlof, 1970).

There are two types of imperfect information. The first type is public incomplete information which means that information is randomly deficient and not manipulated by any agent in the markets, generating deficient resource allocation, and thus resulting losses in an agent's welfare. The second type is asymmetric information which means somebody knows more than somebody else (Veghe, 2005).

Bepczuk (2003) identifies asymmetric information problem in two hindrances. The first is when borrower disguises the true nature of a project. The second is when an investment project puts the borrower in a case in which he questions the ability to repay money to the lender.

Asymmetric information has two elements. The first is moral hazard which is the ability of borrower to employ the funds in different investment than

those agreed upon with the lender (Bebczuk, 2003). It occurs when managers know that owners can't monitor them thus the managers act risk in self-interest (Popovi. *et al*, 2005). The second is the adverse selection which occurs when mangers have all information at the time of decision making while not all information is available to owners. Hence, owners can't be sure of a manager's decision. In addition, the managers have no incentive to disclose about hidden information (Crowther & Seifi, 2011).

Chapter Three

Literature Review

1. Introduction.
2. Empirical Studies.
3. What Distinguishes this Study from Previous Studies.

Chapter Three

Literature Review

Introduction

Financial constraints were highlighted in 1958 by Modigliani and Miller in which they built their argument on the perfect assumption of capital market. Frictions do not exist, and internal or external financing are perfect substitutes. Based on this argument, they conclude that a firm's investment decision is independent from its financial decision. In other words, investments are not sensitive to the availability of internal financing.

Indeed, many researchers find an invalidity of this argument under the imperfection market such as Myers and Majluf (1984), and Fazzari *et al*. (1988). They find that the presence of asymmetric information limited the access of external financing in which firms depend on internal financing, because it has cost advantage compared to external financing. Therefore, they find that the investments have sensitivity to internal financing.

Subsequently, many studies are constructed in developed and developing countries in this topic. Many researchers used investment sensitivity to cash flow as a model to expose financial constraints such as: (Francis *et al*., 2012) and (Zurigat & Gharaibeh, 2011).

Because of doubting the model of investment sensitivity to cash flow in detecting financial constraints, the study of Almeida *et al*. (2004) used alternative model to expose financial constraints; it's called cash flow sensitivity of cash. They show the differences in the response of cash holdings to cash flow across financially constrained and unconstrained firms.

After this finding, some studies come to detect financial constraints by using cash flow sensitivity of cash such as (Bao *et al.,* 2012) and (Zurigat *et al.,* 2012).

Moreover, many researchers improve these models, by adding another factor which can mitigate the sensitivity of cash such as corporate governance (Diaz & Ramirez 2011), financial liberalization (Zurigat & Gharaibeh, 2011), and financial development (Khurana *et al*., 2006). They find that the quality of corporate governance and financial development have a significant impact on cash flow sensitivity of cash.
The following section introduces some empirical studies that present the main topics in this study.

3.2 Empirical Studies

Almeida *et al*. (2004) examine the sensitivity of cash holdings to cash flow and the extent to which they are affected by financial constraints. They used two models for the cash flow sensitivity of cash. The first model defined cash holdings as the ratio of holdings of cash and marketable securities to total assets. The second is modeling the annual change in a firm's cash to total assets also as a function of acquisitions, capital expenditures, changes in short-term debt, and changes in noncash net working capital, and all of these four additional variables are scaled by assets. They evaluate the extent to which the cash flow sensitivity of cash provides an empirically useful measure of financial constraints using a sample of manufacturing firms between 1971 and 2000. They estimate the sensitivity by dividing firms according to financial constraints. In doing so, they use five alternative approaches to partition the sample into unconstrained and constrained asset size, bond ratings, payout policy, commercial paper ratings, and an index of Kaplan and Zingales (1997) (the "KZ index"). They find that under each of the first four approaches, the cash flow sensitivity of cash for the unconstrained firms is not significant, but positive and significant for the constrained firms. The KZ index generates constrained and unconstrained firm assignments that are mostly negatively correlated with those of the other four classification criteria.

Khurana *et al*. (2006) investigate the impact of financial development on the demand for liquidity and how financial development influences the sensitivity of firms' cash holdings to their cash flows. They also investigate the firms' demand of liquidity over the business cycle and how the cash flow sensitivity of cash differs across firm size. Their sample consists of 48,400 firm-year observations covering 12,782 firms from 35 countries. Their model consists of the change in cash holdings as a function of four components which effect operating cash flow, Tobin's q, size, and the change in short term debt and an interaction of financial market development with operating cash flows. The index of financial market development consists of five indices including market capitalization over the Gross Domestic Product (GDP), total value traded over the GDP, total value traded over market capitalization, the ratio of liquid liabilities to the GDP, and the credit going to the private sector over the GDP. To reflect business cycle, they use real GDP growth rate .They take into consideration trade credit and use the level of accounts payable outstanding at the end of each year as a proxy for the trade credit. They define size as the natural log of asset, and classify the sample according to median value; they consider the firm as a large firm if the firm size is higher than the median value, otherwise it is considered as small firm. They find that the cash flow sensitivity of cash is lower in financially developed countries and a firm exhibit less cash flow sensitivity of cash during economic upturns and vice versa.

Abaoub and Bejar (2007) examine the impact of financial constraints on investment to cash flow sensitivity and cash to cash flow sensitivity in non-financial Tunisian firms over the period 2000-2006. They find that a higher investment to cash flow sensitivity in positive cash flow years and financial constraint do have an impact on investment decision in positive cash flow year; on the other hand, financial constraint does not an impact on investment decision in positive cash flow.

Dittmar and Smith (2007) investigate how corporate governance impacts firm value and how good governance helps to prevent the value destruction that results from negligence and profusion which is due to separation of ownership and control. Their sample consists of all US publicly traded firms from 1990 to 2003. They use multiple measure of internal and external corporate governance including the degree of managerial entrenchment due to takeover defenses and the presence of large shareholder monitoring. To measure the degree of managerial entrenchment, they employ two indexes; the first index is Gompers *et al*. (2003), which measures the number of antitakeover provisions in a firm, and it includes 24 provisions - the more antitakeover provisions are an indication of poor corporate governance. The second is Bebchuk *et al*. (2005) which uses only six provisions and have the greatest impact on firm value. According to large shareholder monitoring,

they use the block institutional ownership with the sum of all ownership positions and public pension funds from the Thomson Financial data. To measure the impact of governance on the value, they use a change in cash holdings and the excess returns for firm. They determine the effect of governance by interact the change in cash with each governance measure. They find that the value of a dollar of cash is substantially less if a firm has poor corporate governance, and that firms with poor corporate governance dissipate excess cash reserves more quickly on less profitable investments than those with good governance.

Ginglinger and Saddour (2007) examine the relation between financial constraints, cash holdings, and quality of corporate governance. Their sample consists of all non–financial French firms listed on Euronext Paris from 1988 to 2002. They construct a governance index according to French firms' provision by adding one point for each provision that reduces minority shareholders' protection; the provision includes pyramids, dual class shares, double voting rights, voting caps and limited partnership firm (passive, active or partners) . They classify constrained or non-constrained according to size of the firm's asset, the firm's ability to pay out funds to shareholders (dividend, share repurchase). They use Tobin's Q as a proxy for firms' growth opportunities and measure asymmetric information by using the R&D

expense to sales ratio. They find that firms with low governance quality have lower cash holdings and shareholder rights do have a positive influence on cash holdings for certain financially constrained firms, particularly firms that do not pay dividends and family firms with limited access to external financing.

Lin (2007) developed a model which classified firms to financial constraint firms or not. The goal of his study was to detect the financial constraint in the presence of the market frictions by using cash flow sensitivity of cash. His sample consisted of publicly traded firms in Taiwan that covered the period from 1990 to 2004. He classified firms according to financial constraint by using firm age, bank debt to total debt, whether the firm has ever issued public debt and the correlation between real investment and dividend. He considered firms as financially unconstrained firms if they have a higher bank debt to total debt ratio, firms that are younger, firms that have public debt and firms that have a positive investment-dividend correlation. He finds that firms from both the financially constrained and unconstrained display statistically significant positive cash flow sensitivity of cash which means a wide range of firms in Taiwan are affected by financial market frictions. He finds that firms that issued public debt tend to save more

cash out of their operating cash flow than firms which did not issue public debt.

Agca and Mozumdar (2008) investigate the impact of capital market imperfections on investment–cash flow sensitivity in the US during the period 1970-2001. They used five factors related to capital market imperfections that are analyst following, fund flows, bond ratings, institutional ownership and an index of antitakeover amendments. They find that investment-cash flow sensitivity decreases when there is a reduction in capital market imperfections through increased analyst following, fund flows, institutional ownership, antitakeover amendments and with the existence of a bond rating.

Harford *et al*. (2008) examine the relation between cash holdings and firm governance structure by using a sample of 1872 firms in the US. They use an index of antitakeover provisions, ownership concentration (insider and institutional), compensation to top management (pay sensitivity), and board structure (size and independence) to measure corporate governance. They compute cash holdings by three alternatives. First, the ratio of cash to sales, computed as the log of cash equivalents and cash to total sales. Second, the ratio of cash and marketable securities to net assets computed as total assets minus cash and marketable securities. Third, they create an industry-adjusted measure of the firm's cash to sales ratio (cash holdings). To do this, they

compute the median levels of the ratio of cash to sales within the Fama and French 48 industry categories. The industry-adjusted measure is then calculated as the firm's variable minus the median industry level of the cash to sales ratio. They find similar results to three alternatives. They find that firms with higher insider ownership have higher cash holdings, while firms with poor shareholder rights have lower cash holdings. They show that the presence of excess cash alters the relation between governance and payout, while firms with poor shareholder rights tend to increase dividends.

Diaz and Ramirez (2011) investigated the impact of corporate governance, growth opportunities, and the degree of financial constraints on cash flow sensitivity of cash during the period 1990-2005. They depended on Almeida *et al*. (2004) model to investigate this relation. They constructed constrained index to reflect the degree of firms' financial constraints; this index includes three dummy variables that are payout ratio, firms' size and Standard & Poor's public debt rating. In addition to using corporate governance index as measured by Gompers et al (2003) to reflect the quality of firms' governance. They used Tobin's q as a proxy for the investment opportunities. They find that financially constrained firms exhibit a greater cash flow sensitivity of cash than unconstrained firms, and firms with weak corporate governance

tend to hold more cash than firms with well corporate governance.

Kusnadi (2011) examined the relationships between corporate governance mechanisms and firms' cash holdings; along with the combined effects on firm value, using a sample which consisted of 276 listed firms (142 in Singapore and 134 in Malaysia) and 1549 firm-year observations covering the period from 2000 to 2005. He used both board attributes and measures of ownership concentration as proxies for the nature of a firm's internal governance. The specific proxies are: board leadership structure, board size, board independence, family control, and pyramidal ownership structure. He used sales growth as a proxy to determine firms with better investment opportunities. The results support the flexibility hypothesis in that an increase in agency conflicts between managers and minority shareholder lead to entrenched managers having more discretion to hold cash. In addition, the incremental value of holdings excess cash is negative for firms which are family controlled, firms with a single leadership structure, as well as with a pyramidal ownership structure.

Zurigat and Gharaibeh (2011) clarify the relationship between liberalization and the investment sensitivity to cash flows of 63 non-financial firms listed in Amman Stock Exchange during the period of 1985-2010. They find that the

financial liberalization reduce the investment sensitivity to cash flows by mitigating financial frictions which limit the ability of firms to access external financing. Small firms undergo more financial frictions than large firms, they find that the impact of financial liberalization in small firms is higher than large firms. The small firms become more financially flexibile than large firm after the financial liberalization which tends to reduce the sensitivity of those firms.

Bao *et al*. (2012) examine the cash flow sensitivity of cash by incorporating the possibility of nonlinearity in the response of changes in cash holdingss between positive and negative cash flows. They focus on the different cash flow sensitivities of cash holdings for firms with and without financial constraints. The sample consists of manufacturing firms from 1972 to 2006. They construct financial constraint index according to Whited and Wu (2006) index, payout ratio, firm size, and bond rating. They find that the cash flow sensitivity of cash asymmetry continues to hold in both financially constrained and unconstrained firms, and find that financially constrained firms are less likely to invest in new projects than financially unconstrained firms because it is hard to obtain external financing.

Francis *et al*. (2012) investigate the relationship between investment cash flow sensitivity and firms' corporate governance which include firm-level corporate governance and country-level governance. Their sample consisted of 14 emerging markets. They provide evidence reveals that country-level governance and firm-specific corporate governance are substitutes in determining firms' sensitivity of investment to internal cash flow. They find that firm-level corporate governance positively affects firms' access to financing, as measured by the growth rate in firms' leverage; they also find that firms' investment–cash flow sensitivity increases in response to firms' poor corporate governance and the corporate governance is more effective in countries with relatively weak investor protection.

Han Kuan *et al*. (2012) examined the effects of excess control rights on corporate cash policy among firms with different levels of cash holdings. Their sample consisted of publicly listed companies in Taiwan from 1997 to 2009 .The models in this study evolve two indexes of excess control rights. One focuses on the difference between cash flow rights and voting, and the other observes the difference between cash flow rights and seat control. The dependent variable is cash holdings; they defined it as Harford *et al*. (2008) that cash holdings is the ratio of cash and marketable securities to the net assets of cash. The independent variables include governance variables and

excess control rights. Control variables include leverage, firm size, Market-to-Book ratio, the ratio of net working capital to total assets, dividend dummy, the ratio of R&D to sales, the ratio of cash flow to total assets, rating indicator, and the ratio of capital expenditures to assets. Their result are that the average ratio of founding families as CEO in low cash holdings firms is significantly lower than that for high cash holdings firms, and firms with low cash holdings have a larger Board Size than those of high cash holdings firms.

Zurigat *et al*. (2012) use cash flow sensitivity of cash as a measurement to clarify a financial constraint which faced industrial firms in Jordan during the period (2000-2009). They depended on (Almeida *et al*., 2004) to clarify this relation in addition to **(**Bert *et al*., 2008) by using the percentage change in short term debt to total asset which reflects the extent of using short term debt- the higher this ratio means that the firm cannot achieve long term financing. They used firm size and percentage of dividend to classify firms into constraint or non-constraint. They find that a positive relationship between level of cash and cash flow which mean that the industrial firms face financial constraint which prevented these firms from getting external funds in low cost. In addition to the firms that pay dividends and are considered as a small firm are more sensitive to cash flow compared with large firms and did not pay dividends.

What Distinguishes this Study from Previous Studies.

Most of previous studies focused on the impact of financial constraints on cash flow sensitivity of cash such as Almedia (2004) and Lin (2007). Other studies show the impact of corporate governance in improving the value of cash holdings such as (Harford *et al*., 2008). They clarify the relation between corporate governance structure and cash holdings, and show how corporate governance affects the firms' value and the uses of cash. Therefore, some other studies concentrate on the impact of corporate governance on cash flow sensitivity (Diaz & Ramirez, 2011).

The importance of the current study stems from a lack of studies that investigate the relationship between corporate governance and the cash flow sensitivity of cash. Consequently, the current study tries to use corporate governance structure and financial constraint jointly to clarify its impact on cash flow sensitivity of cash. Therefore, the following chapter comes to clarify that the model was used to investigate this relation and indicate the hypothesis of this study.

Chapter Four

Data and Methodology

4.1 Introduction

4.2 Population and Sample of the Study

4.3 The Data

4.4 Study Instrument

4.5 Hypotheses Development

4.6 The Model

4-7 Clarification of Variables

Chapter Four

Data and Methodology

4.1 Introduction

This chapter presents the methodology used to investigate how corporate governance affect cash flow sensitivity of cash of industrial Jordanian firms listed in Amman Stock Exchange. For this purpose, the current chapter presents the population and sample of the study, sources of data, variables definitions and their theoretical background. It also presents the econometrics technique used to estimate and test all empirical models used in the study.

4.2 Population and Sample of the Study

The population of the study consists of all Jordanian industrial firms listed in Amman stock exchanges during the period 2003-2011. There are 68 listed firms at the end of 2011. The sample was selected according to the following sample selection criteria:

1. The selected firms should publish their financial statement over the period 2003-2011.
2. The selected firms should be listed during the period.

3. The selected firms should maintain in – industrial sector during the period.

A total of 48 qualifying firms have been included in the final sample resulting in a total of 431 observations. 20 companies were excluded due to the lack of adequate data covering the period of study extended from 2003 to 2011.

4.3 The Data

The study uses the panel data analysis. The data used in the study for the period (2003 - 2011) were obtained from ASE website. For the purpose of estimating the corporate governance index; a survey questionnaire was prepared and filled using financial and annual reports which were published by firms. The related information of the study was collected from books, articles, journals and electronic references.

4.4 Study Instrument

The study used a survey questionnaire to construct the corporate governance. The survey questionnaire consisted of 24 items (provisions) that cover six main governance indicators which are: board of directors, board

responsibility and accountability, board of directors meeting, general shareholders meeting, and transparency and disclosure.

The questionnaire used 2-point likert scales, which is ranked as apply, and not apply.

4.5 Hypotheses Development

According to Lin (2007), and Almeida *et al*. (2004), financially constrained firms tend to hold cash from operating cash flow because these firms are more sensitive to the financial market frictions. Hence, the cash flow sensitivity of cash is expected to be greater for a financially constrained firm than for a financially unconstrained firm, implying that financially unconstrained firms have fewer propensities to hold cash than financially constrained firms. Therefore, the study hypothesizes that:

H1: There is a statistically significant relationship between cash flows sensitivity and cash in Jordanian industrial firms.

H2: There is a statistically significant relationship between cash flow sensitivity and financial constraints.

Ginglinger and Saddour (2007), and Dittmar and Smith. (2007) show that the firms with weak shareholders' rights hold more cash than firms with high shareholders' rights, and conclude that a poorly protected shareholder that is

poor governance cannot force managers to disgorge excessive cash. Diaz and Ramirez (2011) suggest that better corporate governance and more powerful shareholders reduce cash flow sensitivity, indicating that the cash flow sensitivity of cash is expected to be greater for poor corporate governance firm than for good corporate governance firms. More precisely, firms with strong corporate governance have fewer propensities to hold cash than firms with poor corporate governance. Hence, the current study hypothesizes that:

H3: There is a statistically significant relationship between cash flow sensitivity and corporate governance.

Almeida *et al*. (2004) state that cash holdings may facilitates investments opportunities. Therefore, firms depend on internal financing to face these investment opportunities and consequently make firms that have more investment opportunities are higher sensitivity to cash. In the light of this finding the current study hypothesizes the follow:

H4: There is a statistically significant relationship between cash flow sensitivity of cash and growth opportunities.

4-6 The Model

To accomplish the study objectives of determining the impact of financial constraints and corporate governance on cash flow sensitivity of cash, the

current study uses the model developed by Almeida *et al*. (2004) and Díaz and Ramirez (2011) to develop the testable empirical model:

$$\Delta CH_{i,t} = a_0 + \beta_1 CF_{it} + \beta_2 CF_{it} . CI_{it} + \beta_3 CF_{it} . MB_{it} + \beta_4 CF_{it} . GI_{it} + \beta_5 CI_{it} + \beta_6 MB_{it} + \beta_7 GI_{it} + u_{it}$$

Where,

ΔCH = Change in Cash Holdings.

CF = Cash Flow.

CI = Constraints Index.

MB = Market to Book Ratio.

GI = Governance Index at time.

U = Term Error.

4-7 Clarification of Variables

Cash holdings: using the change in cash holdings to cash flow to detect the sensitivity of cash across financially constrained and unconstrained firms. Cash flow sensitivity of cash is measured as the change in cash and marketable securities (cash holdings) as a result of the amount of cash flow generated by the firm (**Almeida**. *et al*, 2004) and (**Lin**, 2007).

Cash holdings and cash flow calculate as follows, respectfully:

CH= cash + marketable securities / total asset

Cash flow = cash flow from operating activities.

Financial constraints: using constraints index (*CI*) to capture the degree of firms' financial constraints. It consists of two measures. The first measure is inspired by Almeida *et al*. (2004) size of the firm asset (logarithm of total asset), the second measure is dividend.

The method used to construct ***CI***:

1. Calculating the average of the firms' size.
2. Adding one point if the firm size is greater than the average and adding zero if the firm size is lower than the average.
3. Adding one point if the firm distributed dividend, and zero if not.
4. Summing the point that result from step two and three. Firms that have two points are considered financially unconstrained, while those that have one point are considered as moderate financially constrained, and firms that have zero point are categorized as financially constrained
5. Defining the dichotomy variables Dummy dividend and Dummy size that take a value of one if the firm is financially constrained and zero if the firm is financially unconstrained.

Therefore, ***CI*** is defined as the sum of two dummy variables that represent common proxies for financial constraints:

$$\boldsymbol{CI_{it} = Dum\text{ - }dividend_{it} + Dum\text{ - }size_{it}}$$

Corporate governance: to capture the impact of the quality of governance on cash flow sensitivity of cash using the Gompers *et al* (2003) governance index (***GI***) which used by (Dittmar & Smith, 2007) and (Harford ., *et al* 2008). GI measures the balance of power between shareholders and insiders of the firm.

The data of corporate governance is collected by using a questionnaire which consists of 24 items (provisions) that cover six main governance indicators which are: board of directors, board responsibility and accountability, board of directors meeting, general shareholders meeting, and transparency and disclosure. These items depend on the guide of corporate governance rules in Jordan securities commission.

The method used to construct ***GI***:

1. Adding one point if the firm applies the provision, zero if not.
2. Summing the points of each firm.

3. Firms that have five provisions or less are considered as weak governance firms, while those that have fourteen or more are considered as well governed firms, and those firms that have provision between six to thirteen are considered as moderate governed firms.

4. Defining the dummy variables of corporate governance; take a value of one if the firm is well governed firm and zero if the firm is poor governed firm.

Market to book ratio: many studies use M/B as a proxy for investment opportunities as (Bao *et al*., 2012), Kusnadi (2011) and (Kuan *et al*., 2012). It is measured as market value of equity to its book value.

Chapter Five

Data Analysis

5.1 Introduction

5.2 Statistical Analysis

5.2.1 Descriptive Statistic

5.2.2 Multiple Regression Assumption Test

5.2.2.1 Multicollinearity

5.2.2.2 Heteroskedasticity

5.2.3 Regression Result

5.2.4 The Statistical Differentiating Test

Chapter Five

Data Analysis

5.1 Introduction

The current study aims at investigating the impact of corporate governance on cash flow sensitivity of cash for the sample of industrial firms listed in Amman Stock Exchange over the period 2003- 2011.Therefore, this chapter presents the statistical analysis, including descriptive statistic with estimation results of empirical models and testing hypotheses.

5.2 Statistical Analysis

This section consists of three subsections where section (5.2.1) shows the descriptive statistics of the dependent (Cash holdings) and independent (explanatory) variables. The Dignostic tests for multiple regression assumptions are presented in section (5.2.2) Section (5.2.3) shows the empirical results of pooled, fixed effects and random effects regressions. In section (5.2.4) the study presents the statistical differentiating test for groups of financially constraint and unconstraint firms, and between poor and rich corporate governance firms using t- and F- statistics of analysis of variance.

5.2.1 Descriptive Statistic

In this section, descriptive statistics are reported for the pooled sample where 48 firms of listed firms in ASE out of 68 firms listed at the end of year 2011 are included in the sample of the study. Table (5.1) reported the mean values, standard deviation, minimum and maximum values of the key (proxy) variables used in the study.

Table (5.1) Descriptive Statistics for Key Variables in the model.

Variables	mean	Std.Div	Min	Max	Obs
CFLW	0.042	0.110	-0.349	0.372	431
MB	1.621	1.050	0.222	7.473	432
SZ	6.593	0.778	4.374	8.459	432

CFLW: cash flow, MB: market to book ratio, SZ: size.

- The average of cash flows is 0.042, which means that firms have excess cash flows. The standard deviation estimated at about 0.110 and it has a variation between minimum and maximum range of -0.379 and 0.372 which means there is volatility in cash flows.

- The average of market to book ratio is 1.621 which means that firms have investment opportunities. The standard deviation is estimated at about 1.050

and it has a variation between minimum and maximum which range between 0.222 and 7.473.

- The average of size of industrial firms of the study sample is about 6.593 (Log (size)) with a standard deviation estimated at about 0.778 between a minimum of 4.374 and a maximum of 8.459. This variation is due to the difference between the assets of firms.

5.2.2 Multiple Regression Assumption Tests

5.2.2.1 Multicollinearity

Independent variables may be correlated, suggesting that the model suffering from a multicollinearity problem. The presence of this problem makes the estimation of individual coefficients is not effecient (Gujarati, 2003). More precisely, identifying the effect of the variable separately would be difficult, because of multicollinearity makes the regression coefficients undefined or unstable and the standard errors for the coefficients wildly inflated.

The study uses two tests to investigate whether empirical models are suffering from multicollinearity problems: the first test is the Correlation

Matrix among independent variables; the second one is the Variance Inflation Factor (VIF).

In the context of the first test for multicollinearity, table (5.2) shows the maximum value of correlation coefficients between any two independent variables should not exceeds 0.80 (Gujarati, 2003). However, Anderson *et al*. (1999) consider an absolute correlation coefficient high if it is exceeds 0.70. Hair *et al*. (1998) consider the presence of high correlation is generally when the correlation coefficient is 0.90 and above. The current study considers the correlation coefficient of 80% for the presence of multicollinearity problems.

Table (5.2) Correlation Matrix between Independent Variables

	CF sin	CF.CON	CF.MB	CF.GOV
CFsin	1			
CF.CON	0.7084 (0.000)***	1		
CF.MB	0.3930 (0.000)***	0.3722 (0.000)***	1	
CF.GOV	0.6558 (0.000)***	0.6870 (0.000)***	0.3402 (0.000)***	1

*** denote variable is significant at 1%.

CFsin: is the cash flow sensitivity of cash. CF.CON: is the cash flow by interact the financial constraints. CF.GOV: is the cash flow by interact the corporate governance. CF.MB: is the cash flow by interact the market to book rate.

Although of the common use of correlation matrix to deduct multicollinearity problem in literature, VIF test is widely used because of its advantage of calculating the tolerance value of each variable which is calculated as the reciprocal of VIF value. VIF generally shows the degree to which each independent variable is explained by other independent variables. As a rule of thumb, a VIF of the variable greater than 10 indicates the presence of harmful collinearity (Gujarati, 2003). Table (5.3) shows that the mean value of VIF for all variables is 1.03, where, the value of VIF for all variables in the study empirical model is ranged between (1.01 - 1.05). This finding suggests that the model does not suffer from any multicollinearity problem. As the tolerance value is negatively correlated with the value of VIF, the results suggest that tolerance level of each variable is two high; it is about 0.971, on average.

Table (5.3) Variance Inflation Factor of Key Variables in the Model.

Variables	VIF	1/VIF
CFLW	1.05	0.957
MB	1.04	0.963
SZ	1.01	0.991
Mean VIF	1.03	
Chi2	3.50 (0.0615)**	

CFLW: cash flow, MB: market to book ratio, SZ: size.

5.2.2.2 Heteroskedasticity

In addition to multicollinearity, the study tests for heteroskedasticity problem under the null hypothesis that the variance of regression residuals is constant or homogenous. The significance of testing for multicollinearity and heteroskedasticity assumptions stems from the fact that the failure of data to meet these assumptions may lead to the biased estimation of coefficients and standard of error and, consequently for misleading results (Gujarati, 2003). They may make the p~values of t-test and F-test invalid. For the purpose of testing for heteroskedasticity problem, the current study uses Breuch-Pagan test under the null hypotheses that the variance of the residuals is homogenous. The result of the Breuch-Pagan test in table (5.4) implies that the heteroskedasticity problem does not exist for the sample of this study where the chi square distribution was not statistically significant at 5% (it is 3.50 with the p~value of 0.0615). Consequently, we accept the null hypothesis that the variance of the residuals is homogenous.

Table (5.4) Breuch-Pagan test

Chi2	3.50 (0.0615)**

**denote variable is significant at 5%

5.2.3 Regression Result

The results presented in table (5-5) suggest that the panel data analysis is better than the pooled data analysis for estimating the current study's empirical model. This finding is confirmed by the significant Langragian Multiplayer (LM) where the p~value of its CH2 was 0.000 , suggesting the presence of firm and time specific effects, and consequently making OLS regression not efficient to estimate the study empirical model (Gujarati, 2003). As panel data can be either estimated by fixed effect regressors or random effects regressors, Hausman test is used to differentiate between the two regressors. Table (5.5) is found to be statistically insignificant at 5% level, where the Ch2 was 12.09 with p~value of 0.098 which leads for accepting null hypothesis that the random effect model creates efficient results. Hence, random effects model will be the preferred regressors for estimating panel data set. Hence, discussion will be restricted to the random fixed model which has been found the best for the current study data set.

Table (5.5) The Fixed and Random Effect Models - Cash Flow Sensitivity of Cash

Variables	Fixed Effect Model	Random Effect Model
CONST	0.3641 (0.000)***	0.361 (0.000)***
DUM-GOV	-.0403 (0.043)**	-0.035 (0.077)*
DUM-CON	0.138 (0.180)	-0.154 (0.126)
DUM-MB	0.193 (0.075)***	0.168 (0.119)
CF sin	-0.221 (0.000)***	-0.226 (0.000)***
CF.CON	0.0391 (0.011)**	0.046 (0.002)***
CF.GOV	-0.002 (0.001)***	-0.002 (0.000)***
CF.MB	0.003 (0.984)	0.043 (0.775)
R-squ	0.1237	0.1222
F-statistic	17.50	
observations	431	431
Hausman test	Chi2 statistic = 12.09 Prob(chi2) = (0.0976)**	
LM test	Chi2(1) = 642.68 Prob > chi2 = (0.000)*	

*, **, *** denote variable is significant at 10%, 5% and 1% level respectively. DUM-GOV: is a dummy variable of corporate governance. DUM-CON: is a dummy variable of financial constraints. DUM-MB: is a dummy variable of market to book ratio. CF sin: is the cash flow sensitivity of cash. CF.CON: is the cash flow by interact the financial constraints. CF.GOV: is the cash flow by interact the corporate governance. CF.MB: is the cash flow by interact the market to book rate.

The results presented in table (5.5) show the following:

- The coefficient of cash flow is negative and statically significant at 1% implying that Jordanian industrial firms have a cash flow sensitivity of cash. This result is consistent with (Zurigat *et al*., 2012) and (Almeida *et al*., 2004). This may be attributed to the imperfection of capital market that may restrict the ability of firms from obtaining external funds at lowest cost. Hence, the firms depend heavily on internal funds because the use of internal funds removes the barriers that may face the Jordanian industrial firms from using external funds.

- The coefficient of financial constraints is positive and statistically significant at 1%. This implies that there is a relationship between financial constraints and cash flow sensitivity of cash, suggesting that there is a presence of financial constraints in Jordanian industrial firms. Moreover, this result is consistent with the hypothesis that financial constraint firms hold more cash than unconstraint firms, which means the change in cash holdings that result from operating cash flow for constrained firms are higher than unconstrained firms. The coefficient of CF.CON equals 0.046, which means that the industrial firms in Jordan depend on operating cash flow as internal funds, because they have a limited access to obtain external funds and the external funds are relatively high cost. This reason may be due to instability in an area. Precisely, after occupation of Iraq, the Jordanian banks imposed conservative

credit policy. This result is consistent with (Lin, 2007), (Bao et al., 2012), and inconsistent with (Almeida *et al*., 2004) in hypotheses that the cash flow sensitivity of cash is indeterminate for financially unconstrained firms.

- The coefficient of corporate governance is negative and statically significant at 1%. This suggests that there is a relationship between corporate governance and cash flow sensitivity of cash. The current finding is consistent with the hypotheses of this study that the cash flow sensitivity of poor corporate governance firm is higher than good corporate governance firms, and those firms that have good governance have fewer propensities to hold cash. The coefficient of CF.GOV equals - 0.002 which means that the industrial firm does not apply the corporate governance efficiently. This result may be due to the period that applied the code of corporate governance, and shareholders in industrial firms in Jordan have less power to restrict the managers from wasting financial resources of firms. This result is consistent with (Diaz & Ramirez, 2011).

- The market to book ratio is found to be insignificantly related to cash flow sensitivity of cash, which means the investment opportunities does not impact the sensitivity of cash this result is inconsistent with (Almeida *et al*., 2004), since they find that investment opportunities have a positive significant impact on sensitivity of cash.

5.2.4 The Statistical Differentiating Test

This section presents the statistical differentiating test for groups of financially constraints and unconstraint firm, and between poor and rich corporate governance firms using t- and F- statistics of analysis of variance. More precisely, it investigates whether the cash flow sensitivity to cash differ depending corporate governance structure and level of financial constraints.

Table (5.6) Summary Statistics for Corporate Governance

G.index	Mean	Freq
0	0.064	171
1	0.097	153
2	0.131	108

Table (5.4) shows variables used to classify firms corporate governance structure. Since firms take a zero point if they apply less than or equal 5 provisions, these firms are considered as poor governed firms. Firms that take one point if they apply from 6 to 13 provisions are considered as moderate governed firms. Firms that take 2 points if they apply 14 or more are considered as well governed firms. It shows the frequency of firms during the period since there is 171 poor governed firms, 153 moderate governed firms and 108 well governed firms during the period of the study. Since, some firms

apply more provisions of governance than others firms, which tend to improve the structure of governance in those firms, consequently they decrease their sensitivity of cash. Therefore, there is a lack of applying the provisions of corporate governance.

Table (5.7) ANOVA Test between Groups for Corporate Governance and Financial Constraints.

Variables	P~value
C.Gov	13.65 (0.000)***
F.Con	3.45 (0.033)**

***, ** denote variable is significant at 1% and 5% respectively.

C.Gov: corporate governance and F.Con: financial constraints.

Based on the ANOVA test table (5.7), the F-statistic of variance between groups is found to be statistically significant at 1% level, suggesting that cash flow sensitivity to cash differs depending on the level of corporate governance structure. The value of F-statistic is found to be 13.65 with a p~value of 0.000. This finding supports the hypotheses that cash flow sensitivity of cash is greater for poor corporate governance than for good corporate governance.

The correlation matrix (5.8) shows that the difference exists between firms with less than or equal 5 provisions and firms with 14 provisions or more. It

also exists between firms with 6 to 13 provisions and those with 14 provisions or more. However, no difference exists between those with less than or equal 5 provisions and those with 6 to 13 provisions. This finding implies that unlike well governed firms, the poor governed firms are highly sensitive to the availability to cash. The same conclusion is found between well governed firms and moderate governed firms.

Table (5.8) The Correlation Matrix for Corporate Governance

Row –Colum mean	0	1
1	.004 1.000	
2	0.06 0.000	0.063 0.000

Table (5.9) Summary Statistics for Financial Constraints

Con.index	Mean	Freq
0	0.065	113
1	0.081	232
2	0.108	87

According to financial constraints index table (5.9), there are 113 constraint firms, 232 moderate constraint firms, and 87 unconstraint firms during the period. Therefore, there are financial frictions that face the

Jordanian industrial firms, and consequently, limit their ability to access external funds.

Based on ANOVA test Table (5.7), the F-statistic of variance between groups is found to be statistically significant at 5% level, suggesting that cash flow sensitivity to cash differs depending on the level of financial constraints. The value of F-statistic is found to be 3.45 with a p~value of 0.033. This finding supports the hypotheses that cash flow sensitivity is higher for financially constrained than unconstrained firms.

The correlation matrix (5.10) shows that the difference exists between financially constrained firms, that neither pay dividend nor consider a large firm, and unconstrained firms, that pay dividend and consider a large firm. However, no difference exists between financial constrained firms and moderate financial constrained firms, and financial unconstrained firms and moderate financial constrained. This finding implies that financial constrained firms are highly sensitive to cash in comparison with unconstrained firms.

Table (5.10) The Correlation Matrix for Financial Constraints.

Row –Colum mean	0	1
1	0.016 0.662	
2	0.043 0.028	0.027 0.195

Chapter Six

Conclusion and recommendation

6.1 Introduction

6.2 Conclusion

6.3 Recommendation

Chapter Six

Conclusion and Recommendation

6.1 Introduction

This chapter provides the conclusion and recommendation of this study.

6.2 Conclusion

The study used the cash flow sensitivity of cash to detect the financial constraint in industrial firms in Amman Stock Exchange over the period (2003-2011), in addition to including the corporate governance as other factor which impact on cash flow sensitivity of cash.

The regression result shows the presence of sensitivity of cash flow in Jordanian industrial firms which due to financial friction that face those firms and to the quality of corporate governance. In the light of these results, the researcher concludes that the Jordanian industrial firms face financial constraints which mean those firms have limited access to external funds, thus the Jordanian industrial firms depend on internal funds.

Moreover, the result indicates a negative relationship between corporate governance and cash flow sensitivity of cash but the value of this relation is

powerless, which means the quality of corporate governance in the Jordanian industrial firms mitigates the sensitivity of cash. But those firms don't apply the mechanism of corporate governance efficiently and don't apply all mechanism. So, those firms should focus on improving their corporate governance.

6.3 Recommendations:

Based on the result of this study, the study recommends the following:

1. Jordanian industrial firms should focus on improving their corporate governance, which will enhance the value of cash.

2. Further research could be conducted to expand the scope of the current study through the inclusion of the remaining sector. This would make the result of this study more effective.

3. Take a suitable procedure to mitigate the financial constraints that face the industrial firms in Jordan.

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